

NPN MEDIUM POWER TRANSISTORS

| Type | Marking |
|--------|---------|
| STF715 | 715 |
| STN715 | N715 |

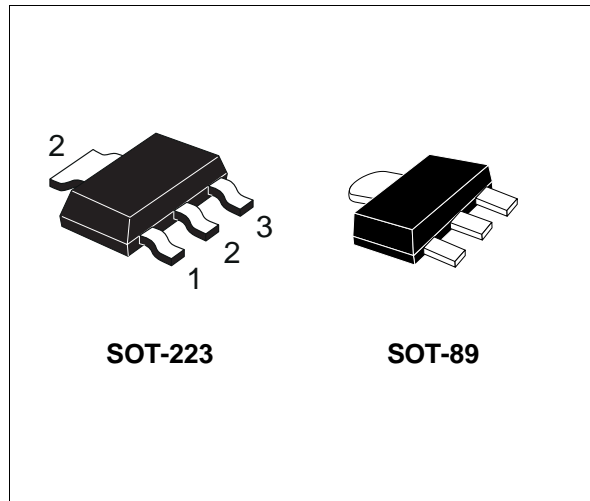
- SURFACE-MOUNTING DEVICES IN MEDIUM POWER SOT-223 AND SOT-89 PACKAGES
- AVAILABLE IN TAPE & REEL PACKING

APPLICATIONS

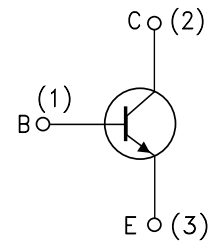
- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

DESCRIPTION

The STF715 and STN715 are NPN transistors manufactured using Planar Technology resulting in rugged high performance devices.



INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit | |
|-----------|---|------------|---------|------|--------|
| | | Devices | STN715 | | STF715 |
| | | Packages | SOT-223 | | SOT-89 |
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 140 | | V | |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 80 | | V | |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 5 | | V | |
| I_C | Collector Current | 1.5 | | A | |
| I_{CM} | Collector Peak Current ($t_p < 5$ ms) | 2 | | A | |
| I_B | Base Current | 0.3 | | A | |
| I_{BM} | Base Peak Current ($t_p < 5$ ms) | 0.6 | | A | |
| P_{tot} | Total Dissipation at $T_c = 25$ °C | 1.6 | 1.4 | W | |
| T_{stg} | Storage Temperature | -65 to 150 | | °C | |
| T_j | Max. Operating Junction Temperature | 150 | | °C | |

STF715 - STN715

THERMAL DATA

| | | | SOT-223 | SOT-89 | |
|-----------------|-------------------------------------|-----|---------|--------|------|
| $R_{thj-amb}$ • | Thermal Resistance Junction-ambient | Max | 78 | 89 | °C/W |

• Device mounted on a PCB area of 1 cm².

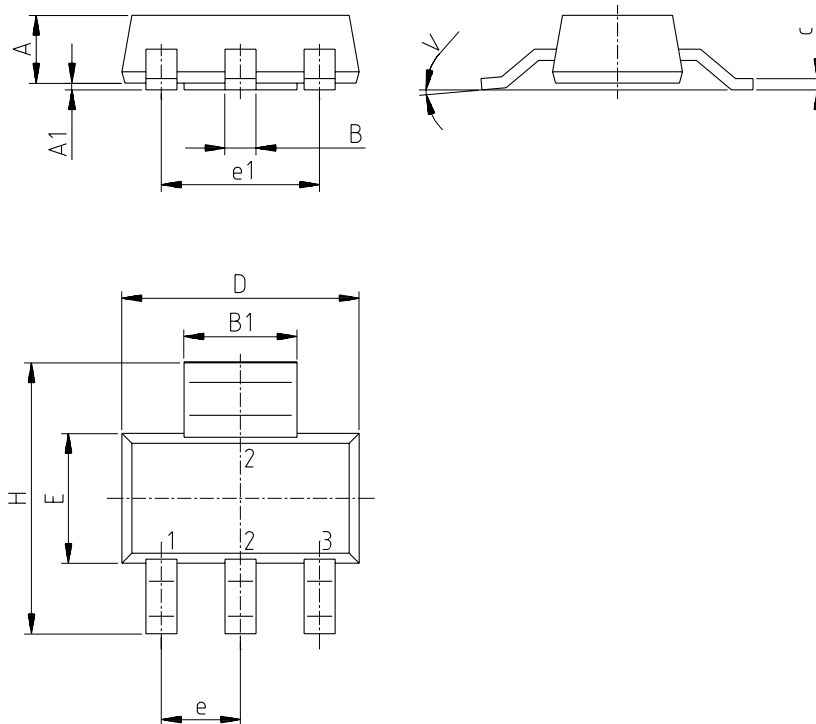
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|-------------------------|---|--|---|-----------------|------|-------------|--------|
| I _{CES} | Collector Cut-off Current (V _{BE} = 0) | V _{CE} = 140 V | | | | 500 | μA |
| I _{CEO} | Collector Cut-off Current (I _B = 0) | V _{CE} = 80 V | | | | 1 | mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V | | | | 100 | μA |
| V _{CEO(sus)} * | Collector-Emitter Sustaining Voltage (I _B = 0) | I _C = 10 mA | | 80 | | | V |
| V _{CE(sat)} * | Collector-Emitter Saturation Voltage | I _C = 100 mA I _C = 1 A | I _B = 10 mA I _B = 100 mA | | | 0.25 0.5 | V V |
| V _{BE(sat)} * | Base-Emitter Saturation Voltage | I _C = 100 mA I _C = 1 A | I _B = 10 mA I _B = 100 mA | | | 1 1.1 | V V |
| h _{FE} * | DC Current Gain | I _C = 100 mA I _C = 500 mA I _C = 1 A | V _{CE} = 2 V V _{CE} = 2 V V _{CE} = 2 V | 140 80 40 | | | |
| f _T | Transition Frequency | I _C = 0.1 A | V _{CE} = 10 V | | 50 | | MHz |

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

SOT-223 MECHANICAL DATA

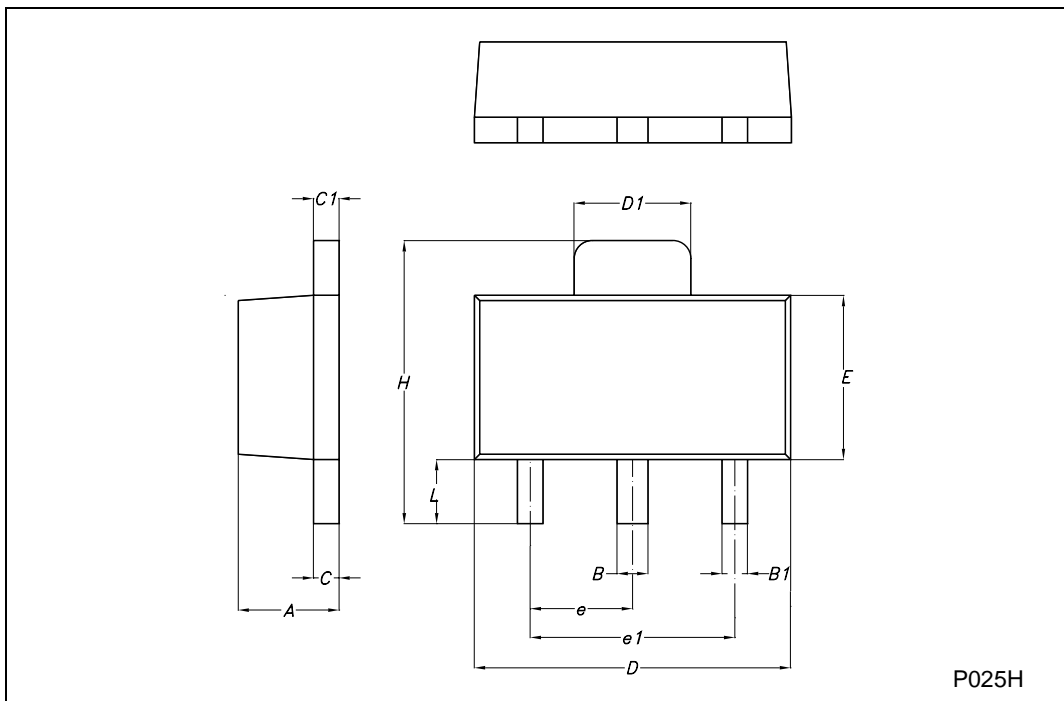
| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | | 1.80 | | | 0.071 |
| B | 0.60 | 0.70 | 0.80 | 0.024 | 0.027 | 0.031 |
| B1 | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| c | 0.24 | 0.26 | 0.32 | 0.009 | 0.010 | 0.013 |
| D | 6.30 | 6.50 | 6.70 | 0.248 | 0.256 | 0.264 |
| e | | 2.30 | | | 0.090 | |
| e1 | | 4.60 | | | 0.181 | |
| E | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| H | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| V | | | 10° | | | 10° |
| A1 | | 0.02 | | | | |



P008B

SOT-89 MECHANICAL DATA

| DIM. | mm | | | mils | | |
|------|------|------|------|-------|------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 1.4 | | 1.6 | 55.1 | | 63.0 |
| B | 0.44 | | 0.56 | 17.3 | | 22.0 |
| B1 | 0.36 | | 0.48 | 14.2 | | 18.9 |
| C | 0.35 | | 0.44 | 13.8 | | 17.3 |
| C1 | 0.35 | | 0.44 | 13.8 | | 17.3 |
| D | 4.4 | | 4.6 | 173.2 | | 181.1 |
| D1 | 1.62 | | 1.83 | 63.8 | | 72.0 |
| E | 2.29 | | 2.6 | 90.2 | | 102.4 |
| e | 1.42 | | 1.57 | 55.9 | | 61.8 |
| e1 | 2.92 | | 3.07 | 115.0 | | 120.9 |
| H | 3.94 | | 4.25 | 155.1 | | 167.3 |
| L | 0.89 | | 1.2 | 35.0 | | 47.2 |



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